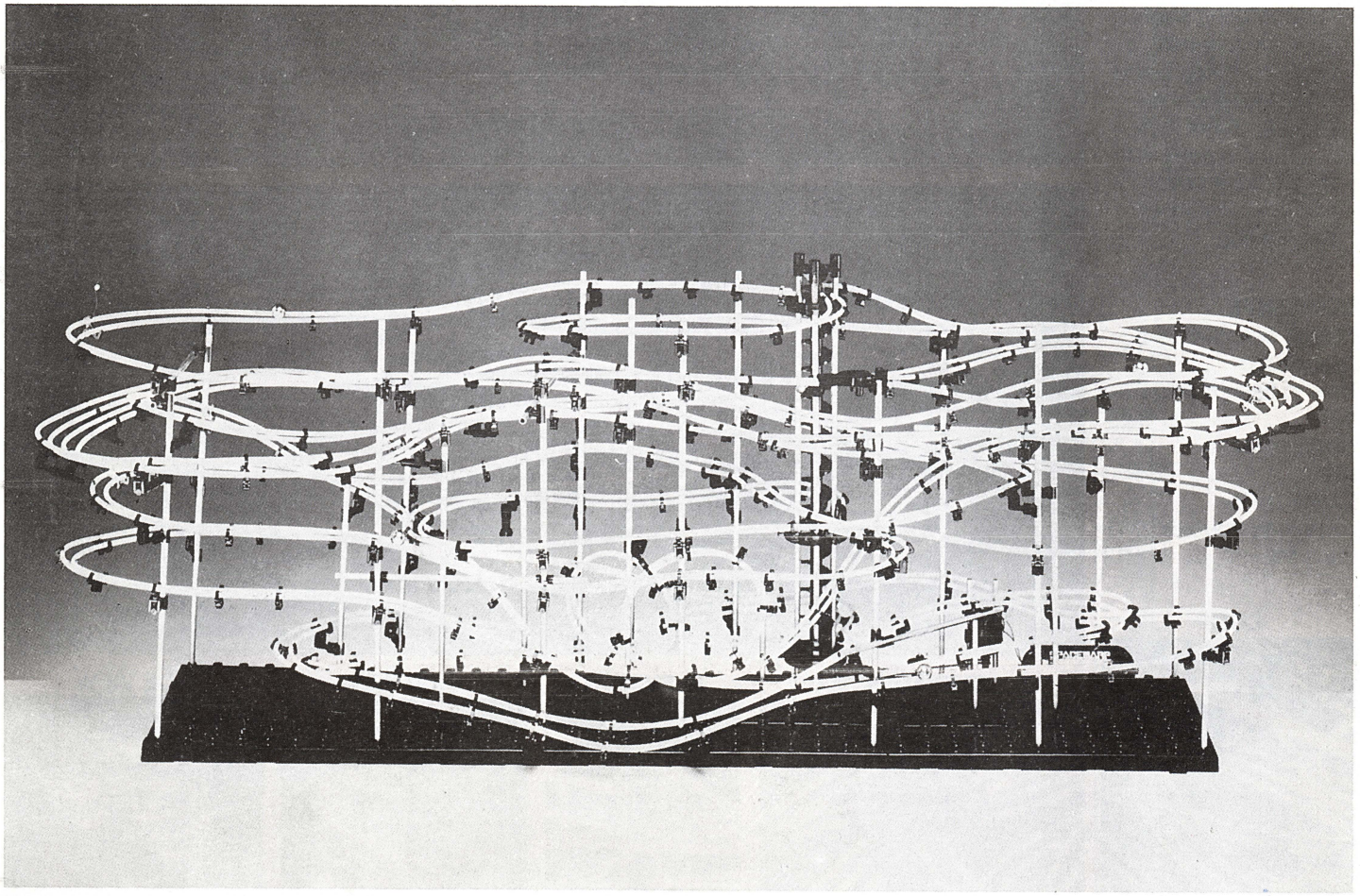
INSTRUCTION BOOKLET

SPACEWARP™

Fun to build! Thrilling to play! Create a crazy roller coaster.

SET 30 Advanced Coaster



For children under 12 years old, parental assistance in assembly of item may be required.

BANDAI

This double set has the addition of double rails, which enables you to enjoy more exciting course layouts.

SPACEWARP is a new hobby of design in space, by creating a network of rails based on calculations of how a ball moves through them.

PRIOR TO ASSEMBLY

- Read the instructions carefully before assembling.
- The parts are shown on the back cover. Check that all the parts are included before assembling.
- Trim any extra plastic off components.
- The tools you might need for assembly are pliers, a Phillips screwdriver, needle nose pliers and mat knife.
- Cut out the parts list on the back cover and refer to it when assembling.

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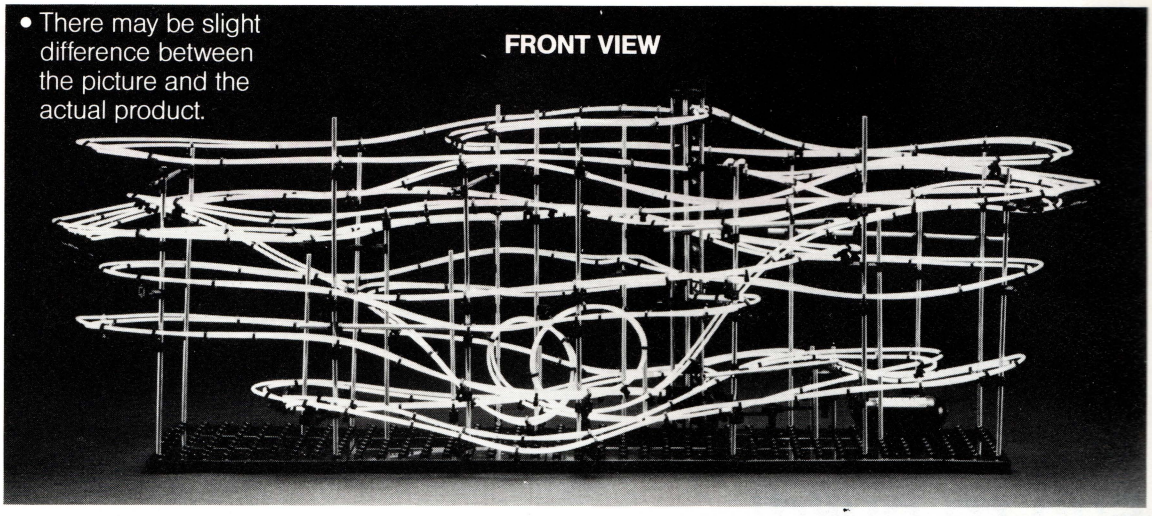
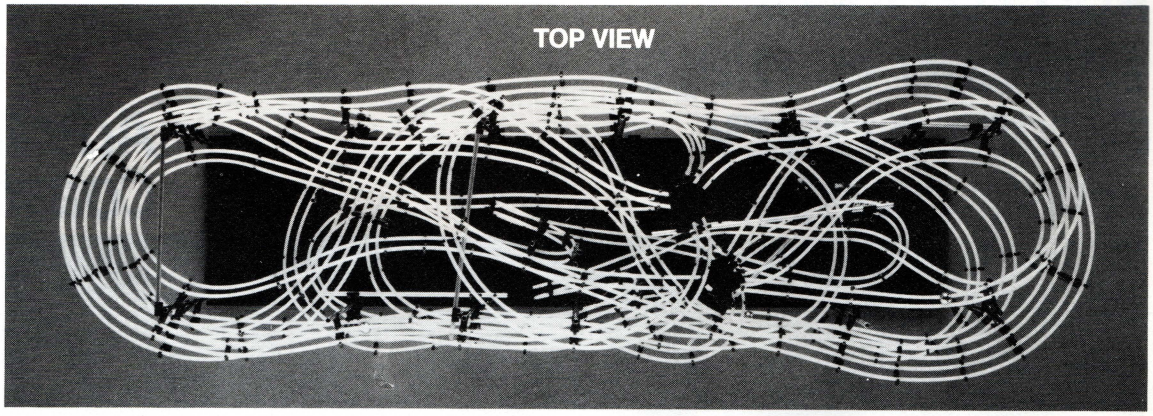
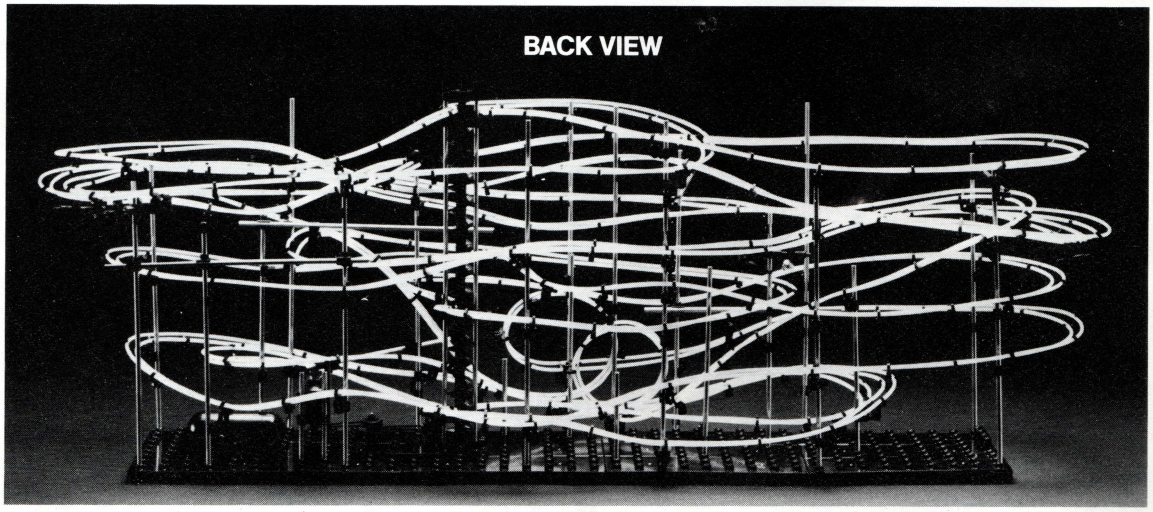
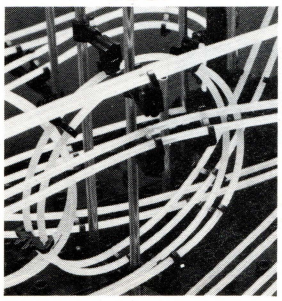
Picture of assembled spacewarp P2
How to assemble 1-8 . . . . . P3-P7
Basic layout plans P8-P10
Check list for correcting troubles . P11
Parts list P12

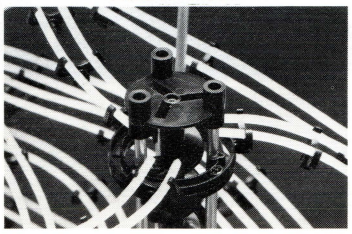
- There may be slight difference between the picture and the actual product.

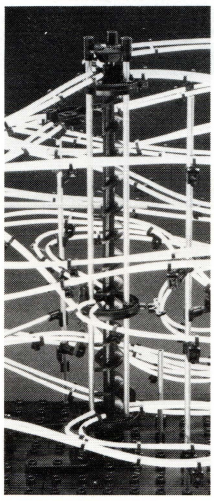

FRONT VIEW

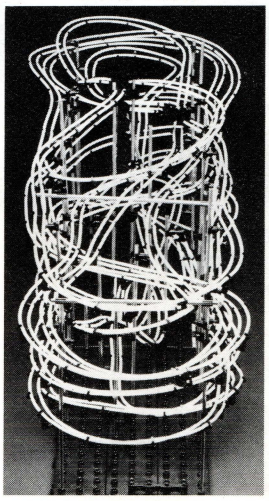

TOP VIEW

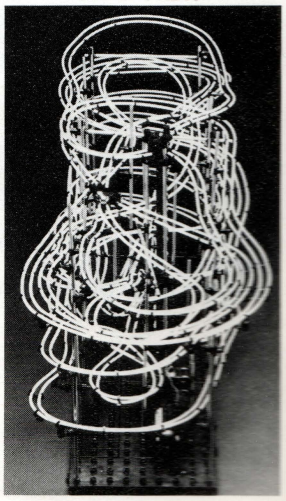

BACK VIEW

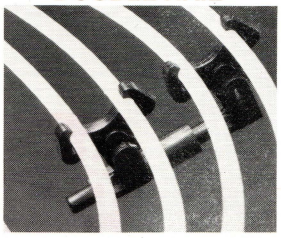

LOOP

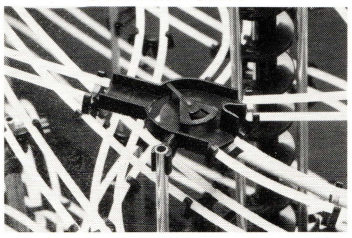

ELEVATOR


ELEVATOR


SIDE VIEW


SIDE VIEW

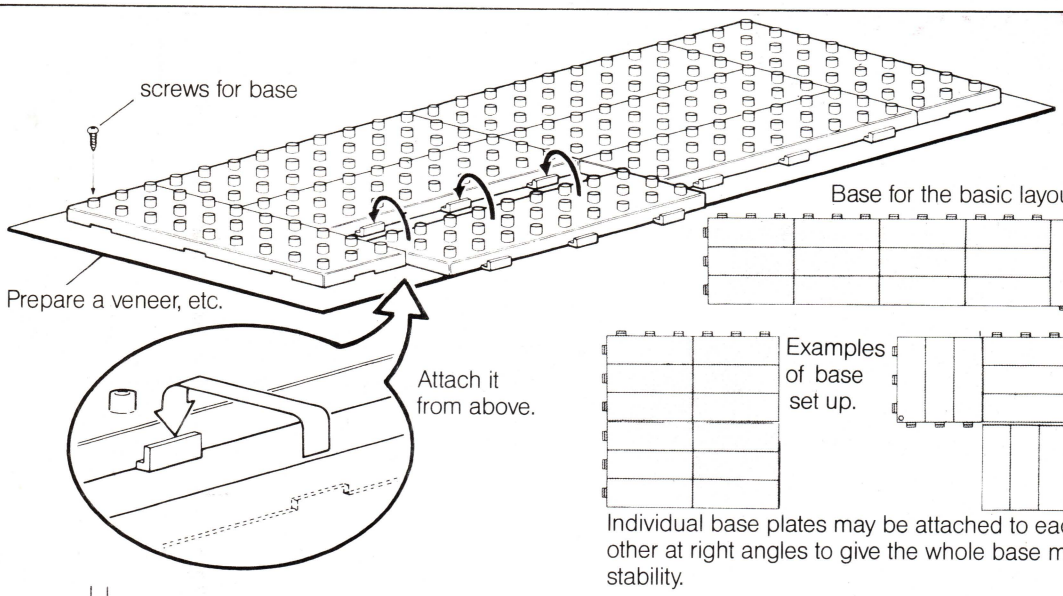

DOUBLE RAIL


SWITCH UNIT

HOW TO ASSEMBLE SPACEWARP

1. BASE ASSEMBLY

First, think of a basic layout, depending upon what kind of course you would like to create. (An example is shown.) Next, connect the base units using the connecting hooks. Make sure they are aligned properly; they will not connect if put together in the wrong direction. When you expand the size of the base and you find it necessary to increase the strength or you want to display the completed set, use the screws that are included in the set to fix the base to a board, etc. See page 8 for the basic layout



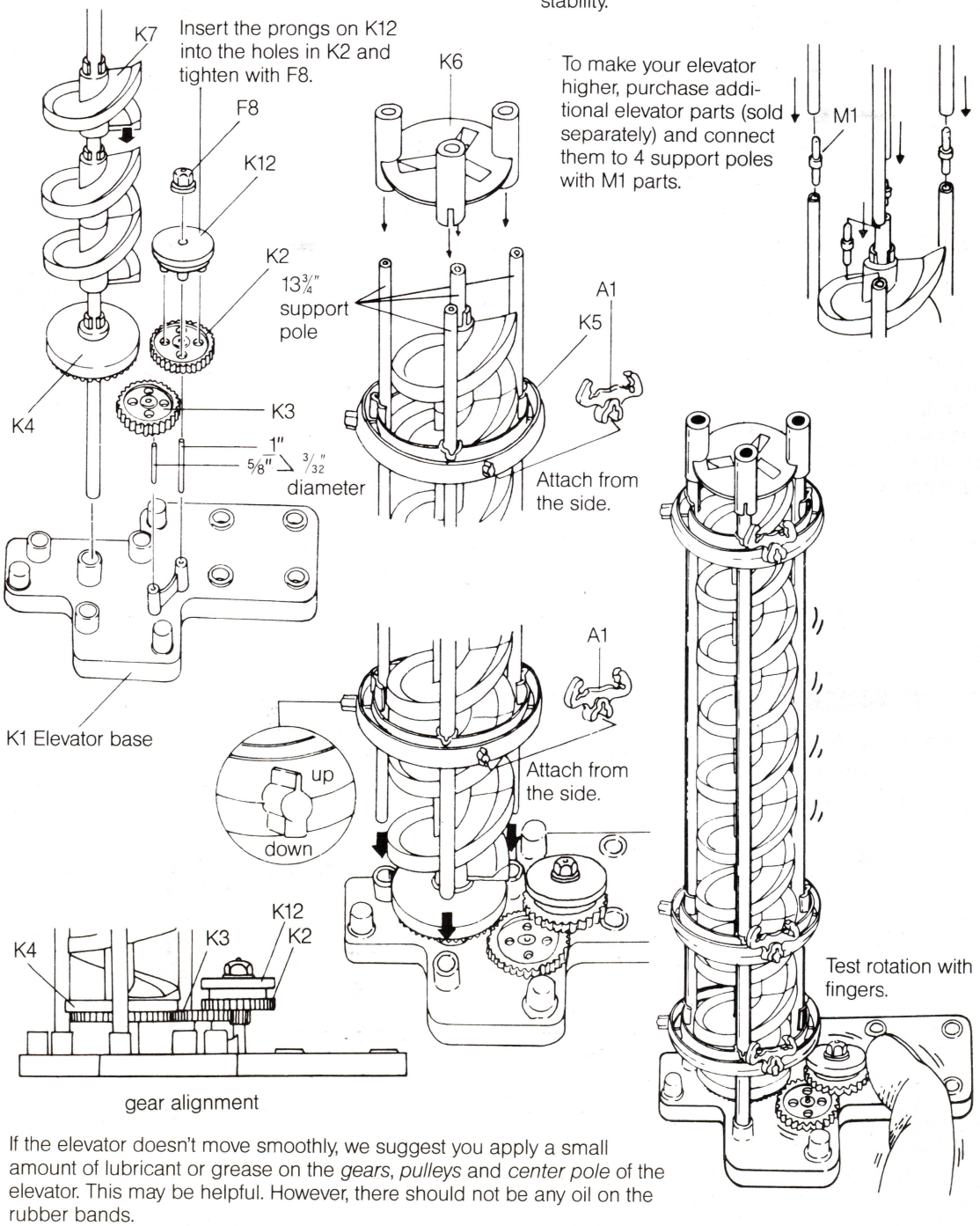
Individual base plates may be attached to each other at right angles to give the whole base more stability.

2. ELEVATOR ASSEMBLY

Insert 5/8" and 1" gear shafts in the indicated positions, making sure each gear is complete. Insert a 13 3/4" long support pole. Slide a K4 on the pole and add K7s one on top of another. Be careful that K4 is right side up. The gears should match as shown in the picture. When you have finished stacking the K7s, insert 3 more support poles (13 3/4") to the indicated positions, fixing their positions with K5. Make sure you have K5 right side up. Put K6 on top, and the elevator is complete.

K5 will be the entrance or exit for your ball. Make sure it aligns with the rails by jiggling it up and down a little, if necessary. Fix A1 to the entrance.

When you are finished, test to see that the gears turn smoothly by moving them with your fingers. If you hear a strange sound or if it's too tight to rotate, first check to see that the elevator is not warped, then adjust the connection of the gears.



If the elevator doesn't move smoothly, we suggest you apply a small amount of lubricant or grease on the *gears*, *pulleys* and *center pole* of the elevator. This may be helpful. However, there should not be any oil on the rubber bands.

3. MOTOR ASSEMBLY

Connect G3 to the motor as shown, and bend the prongs of the motor slightly inward. Make sure you match the shape of the tip on the back of the motor with the hole of G3. If not matched properly, they will not work well. Place the motor with wires and connectors attached on G1. Cover them with G2. The lead wire should be fastened to the metal fittings tightly. Hook the motor bed to the two support poles and connect the motor to it.

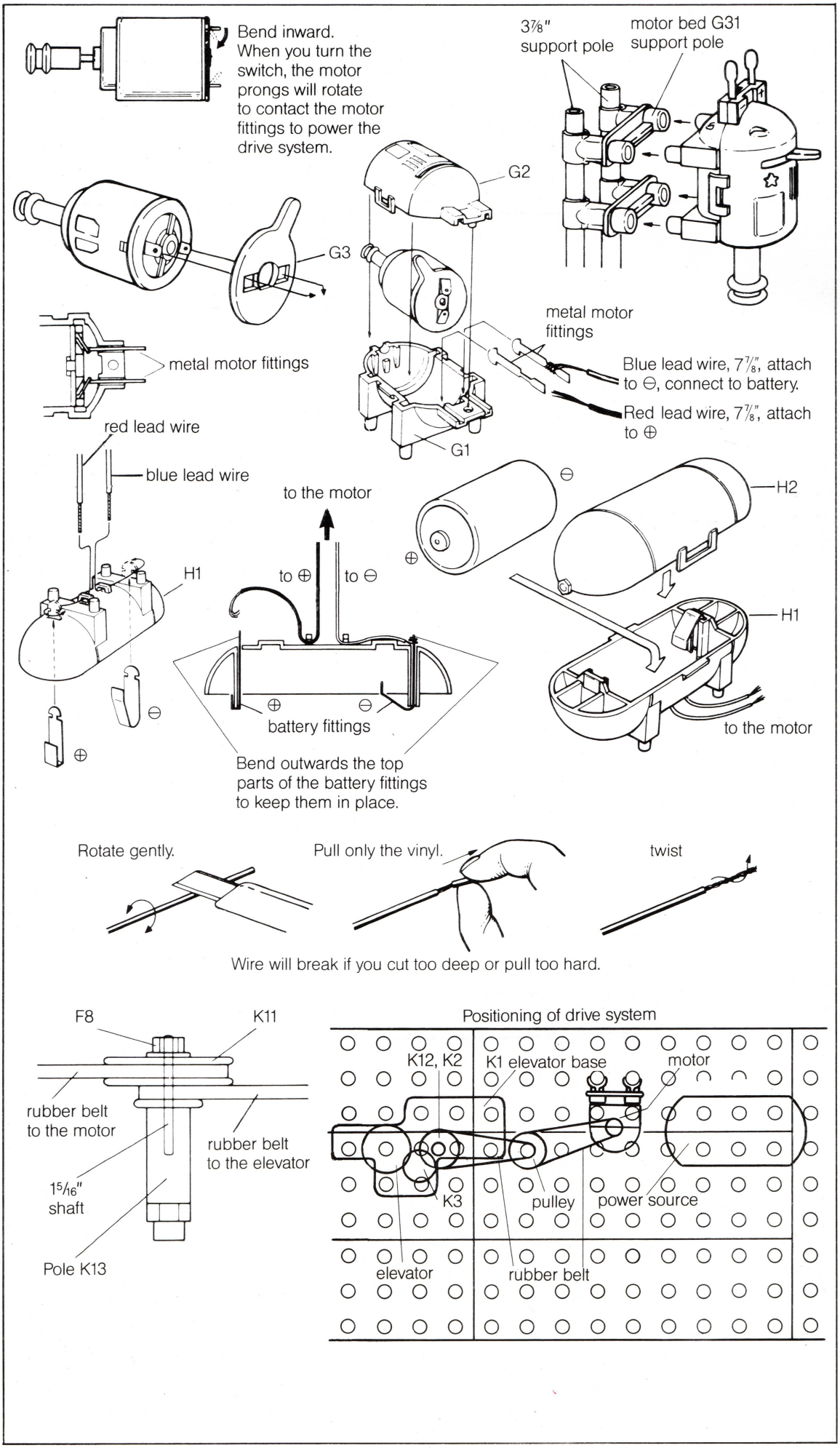
4. POWER UNIT ASSEMBLY

Attach metal battery fittings ⊕ ⊖ and the lead wires to H1. Insert one (1) 'D' battery (sold separately) and cover it with H2. Avoid mixing up ⊕ ⊖.

PLEASE NOTE: To expose the electric wire in the lead line, trim the vinyl cover by carefully cutting it with a knife, and pull it gently.

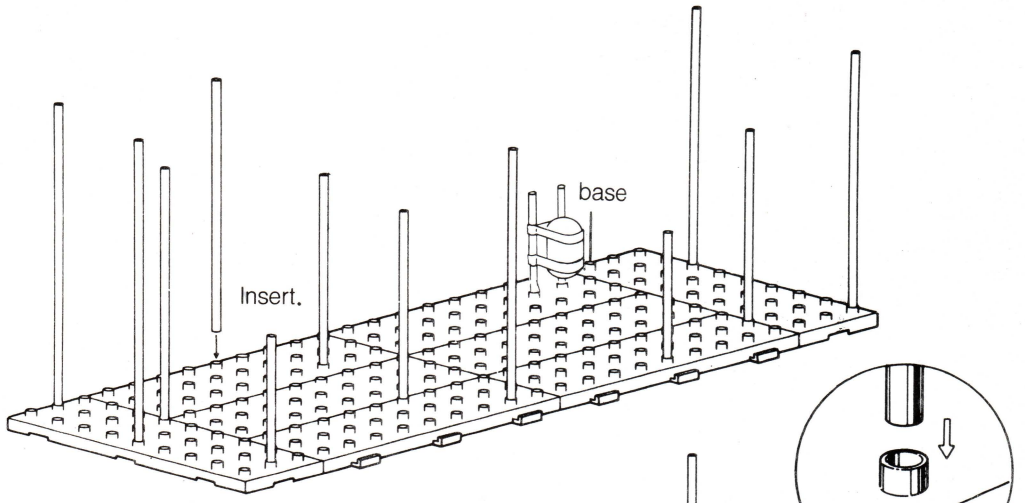
5. CHECK POINT 1

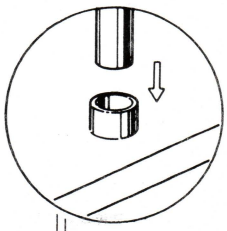
When you have completed this stage, attach the elevator, the motor and the power supply to the base. Match the colors of the lead wires when you connect the motor with the power supply. Turn the switch on (by pushing the lever toward the star), and check that it moves. If it doesn't move, check to see that the metal fittings are connected properly and that the lead wires are wrapped around enough.

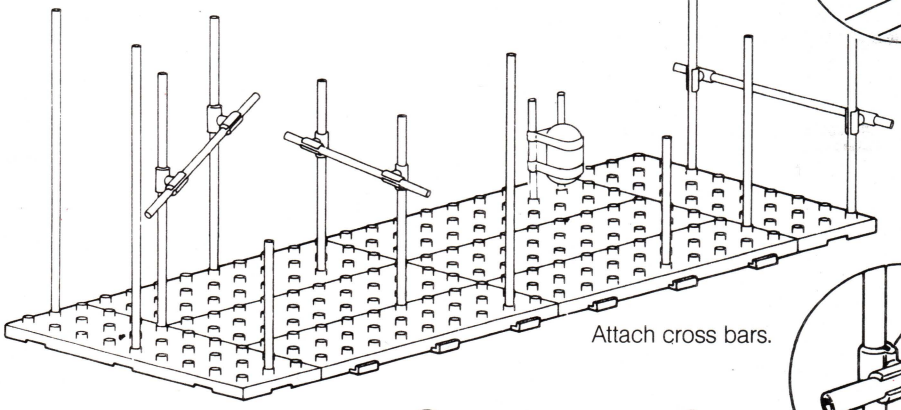


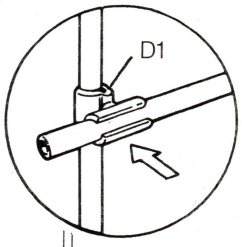
6. HOW TO ASSEMBLE SUPPORT POLES

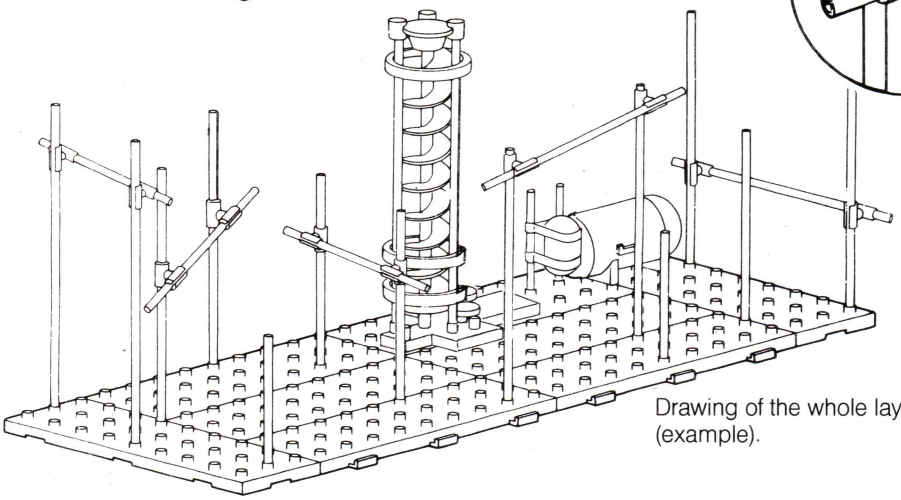
Insert the support poles into the base holes. (The drawing is an example. For the basic layout, refer to the ground plan on P8 and the picture of the completed set on P2.) Once the vertical poles have been inserted, attach cross bars where needed to strengthen the vertical poles, or where necessary for your layout. As shown here, insert the cross bars horizontally in D1.







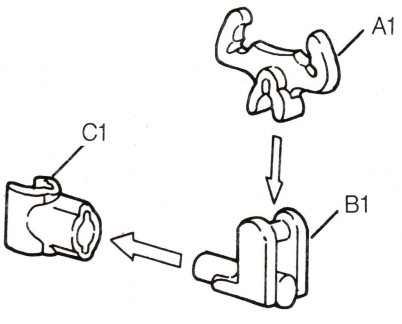


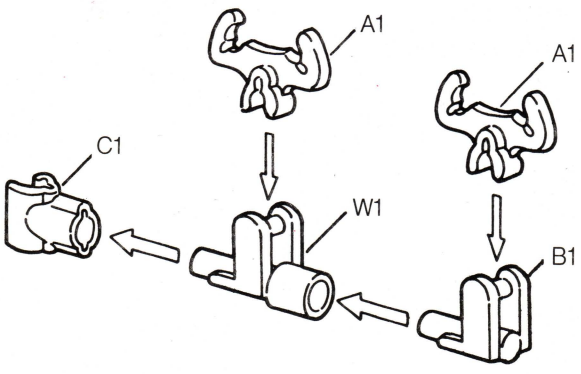


Drawing of the whole layout (example).

7. HOW TO ASSEMBLE RAIL ARMS

Assemble the arms that support the rails as shown. (Part W1 may not be included in some sets, depending upon the contents of the set.)





8. HOW TO ATTACH RAILS

Attaching rails is easy if you follow the directions step by step.

In the basic layout, the whole system is divided into 5 segments. Start temporary assembly from the bottom, and work your way up.

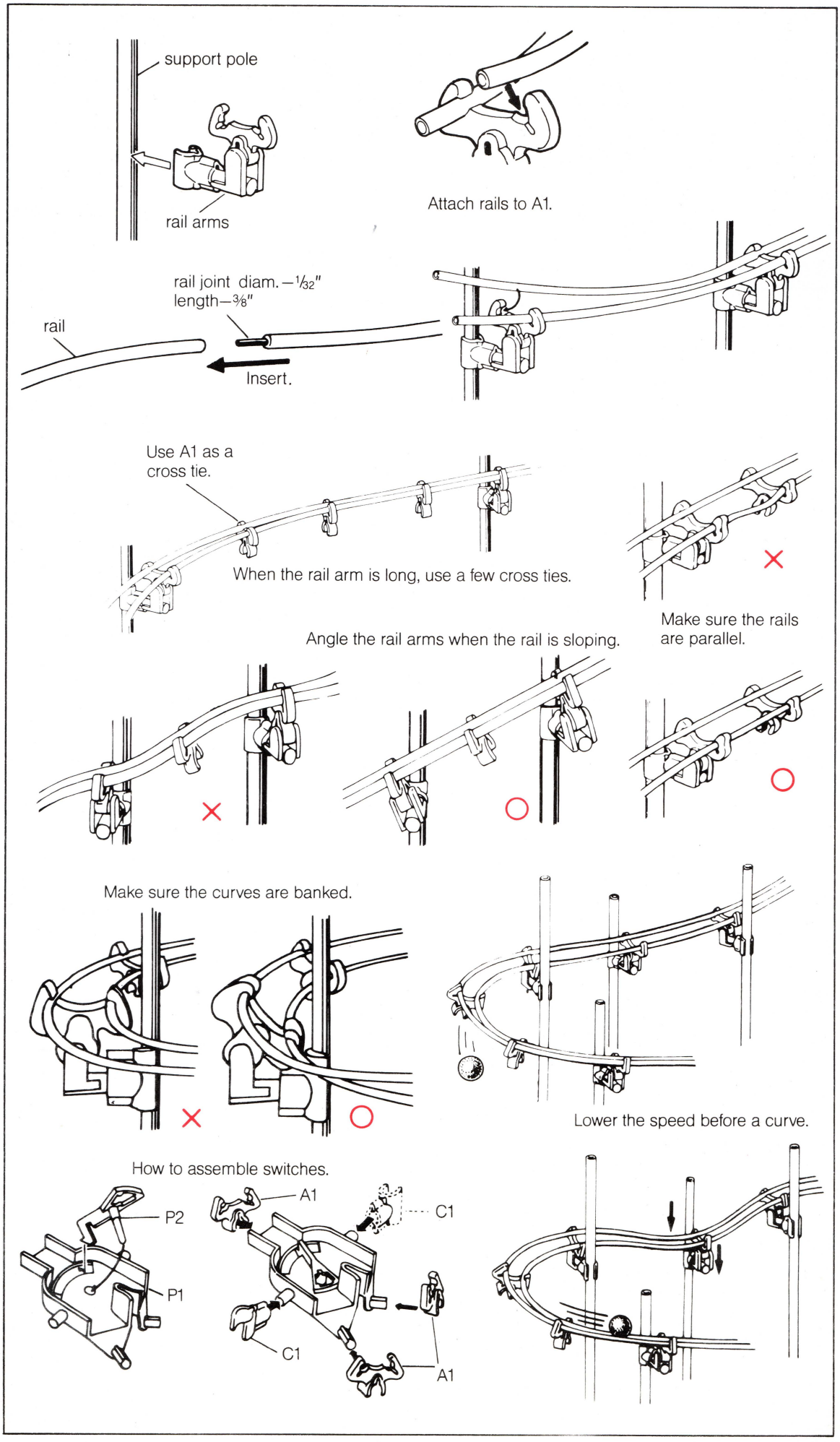
• Attach rail arms to each support pole, referring to the picture of the completed basic layout. Rather than attaching all rail arms at once, it will be better if you first attach only the bottom rail arms, then the rails, and then move to the middle layer, etc. You should also restrict the rail arms only to the necessary positions. At this point, you can temporarily assemble the whole set without giving too much detailed attention to the exact height or the exact angle of the rail arms.

To connect rails, use rail joints (⅜" shafts). Insert them in the hole in the center of the rails. Trim the end of rails neatly so the joint is smooth.

When the parts are all assembled, test with a ball and adjust accordingly.

How to assemble switches.

Insert P2, making sure the claw fits into the slot. Be careful not to break the claw. Attach part A1 to the entrances and exits as shown. Then, use C1 to attach the switch to the support pole.

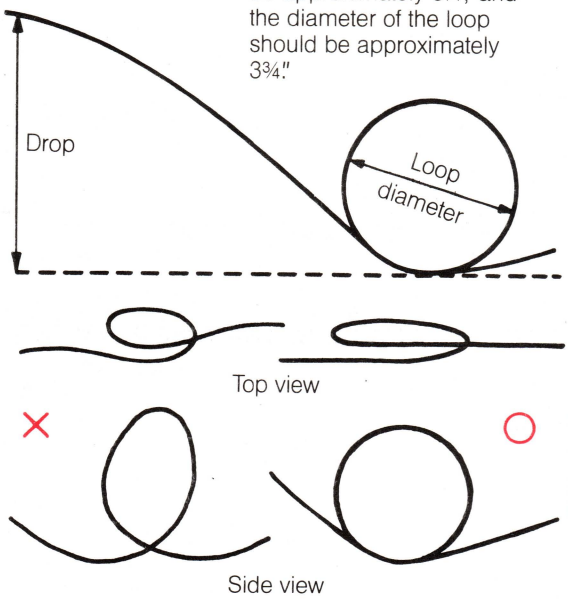


X = INCORRECT WAY
O = CORRECT WAY

If the ball derails, bank the curve. If derailing still occurs, the speed of the ball is too high. Slow the ball down before it enters a curve as shown in the drawing.

Make sure the rails are not distorted. Particularly, if the loop doesn't form a perfect circle, the ball will not go around properly.

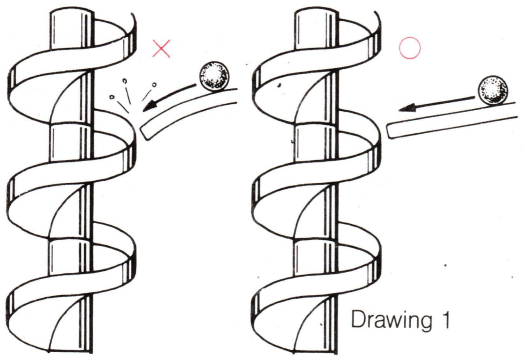
Ex) The vertical drop should be approximately 8¼," and the diameter of the loop should be approximately 3¾."

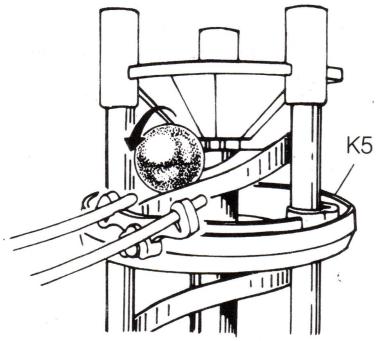


9. ELEVATOR ENTRANCES AND EXITS

Elevator entrances and exits should be both on the same side. This reassures continuous driving.

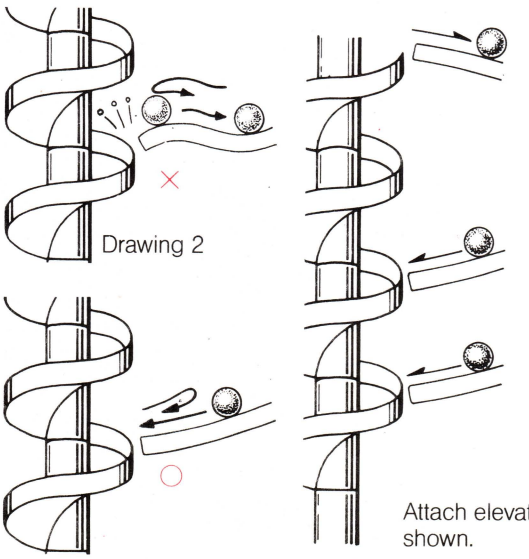
The elevator entrance should be located on an upper level, allowing the ball to roll easily down a long path as shown in Drawing 1.



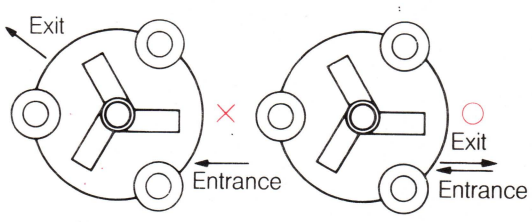


Adjust K5 up and down. Adjust the rail so the ball will ride on it smoothly.

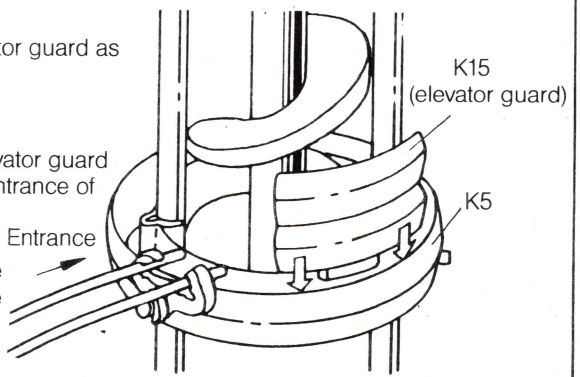
If the ball is moving too fast, it may bounce or fall off. Drawing 2 shows a case where the ball bounces back, loses its speed, and stops on the rail.



When installing rails at the exit of the elevator, you should bring the rails as close as possible to the spirals of the elevator. This will help the ball ride smoothly after it comes out of the exit.



The elevator entrance (using part K5) can be installed at any height, and as many as desired may be used. But, the entrance and exit should be on the same side, since the ball must come out of the same side as it goes in to ensure continuous riding.

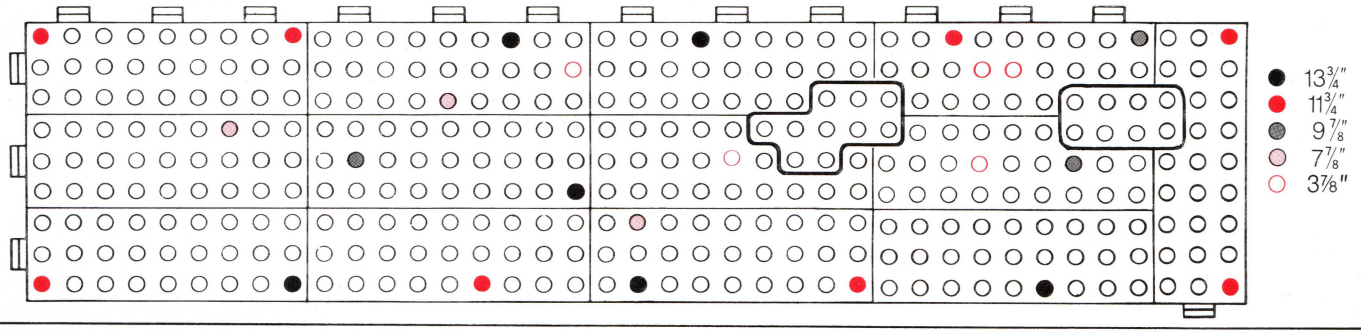

Attach elevator guard as shown.
K15 (elevator guard)
Insert an elevator guard next to the entrance of the ball.
K5
Entrance
If the ball does not enter the elevator easily, pull back the ends of the rails to let the ball drop into the elevator entrance.

X = INCORRECT WAY
O = CORRECT WAY

MASTER THE BASIC LAYOUT FIRST BEFORE YOU CREATE YOUR OWN ORIGINAL COURSES.

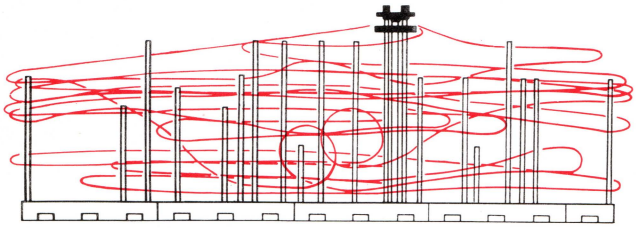
SPACEWARP allows you to create your own course layout. But it will help to first master the basics of course creation with the basic layout here. Then you can expand your enjoyment of SPACEWARP with partial changes of the basic layout to totally creating your own layouts.

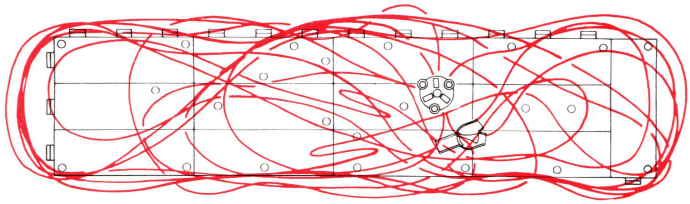
POSITIONS OF SUPPORT POLES AND POWER COMPONENTS



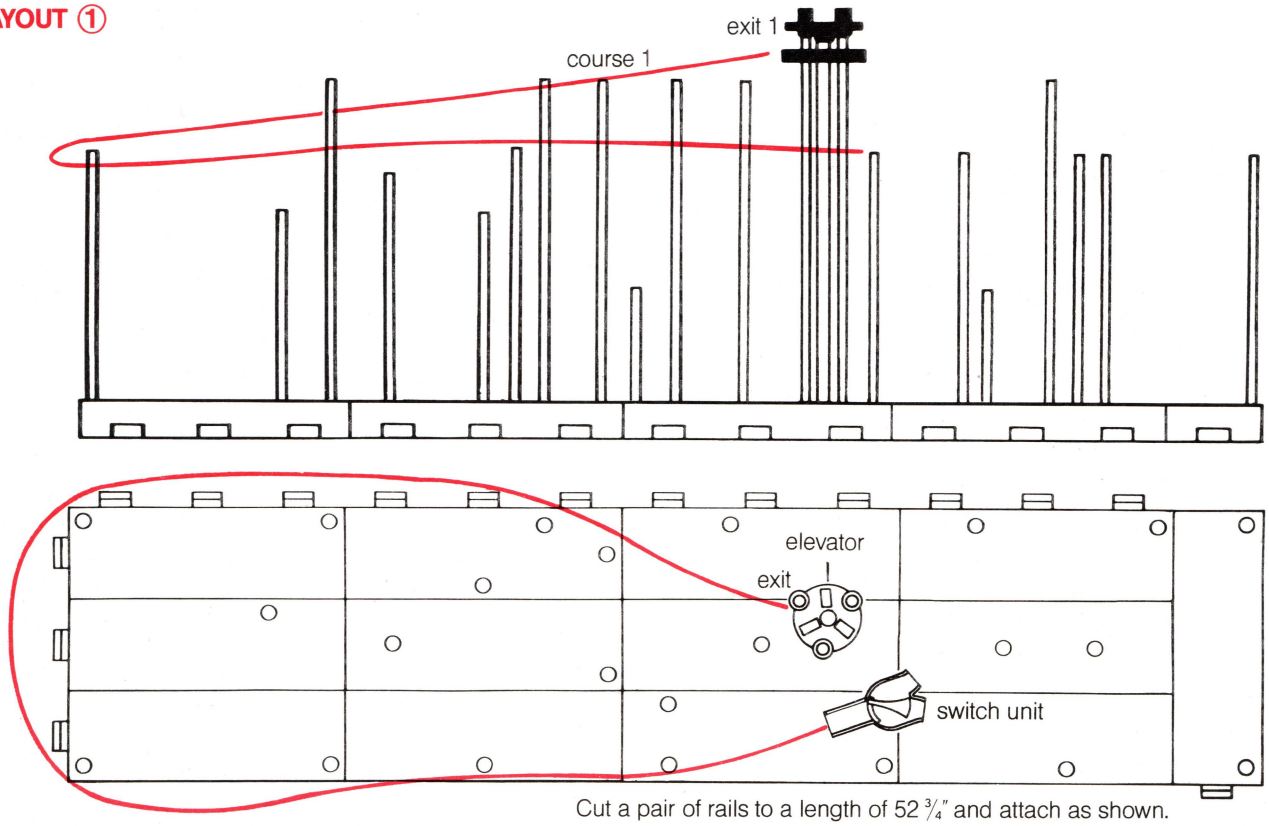
Place support poles at the places marked with •. Attach cross bars referring to the picture. Attach the elevator and the power unit as shown.

THE WHOLE LAYOUT





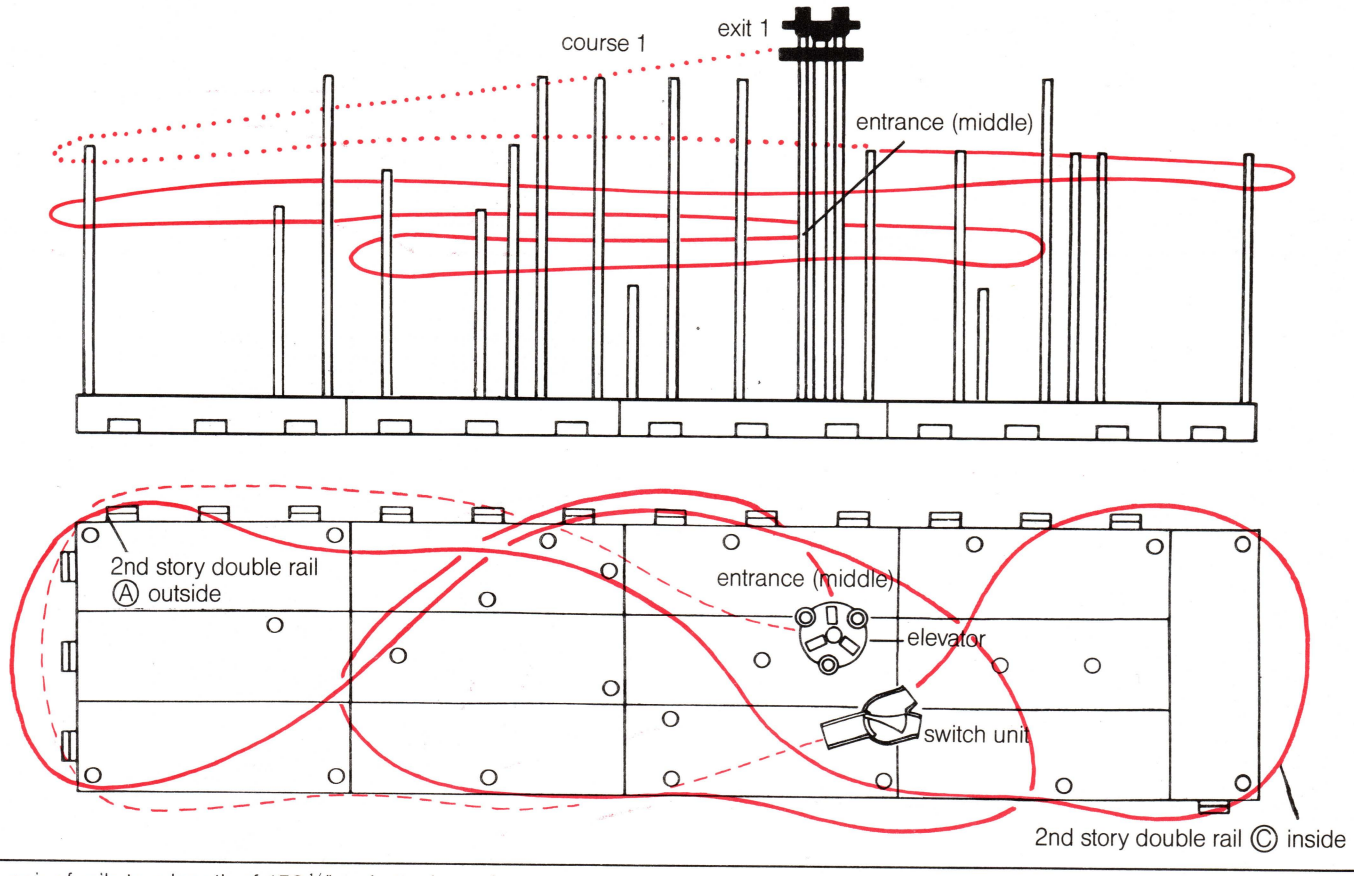
LAYOUT ①



Cut a pair of rails to a length of 52¾" and attach as shown.

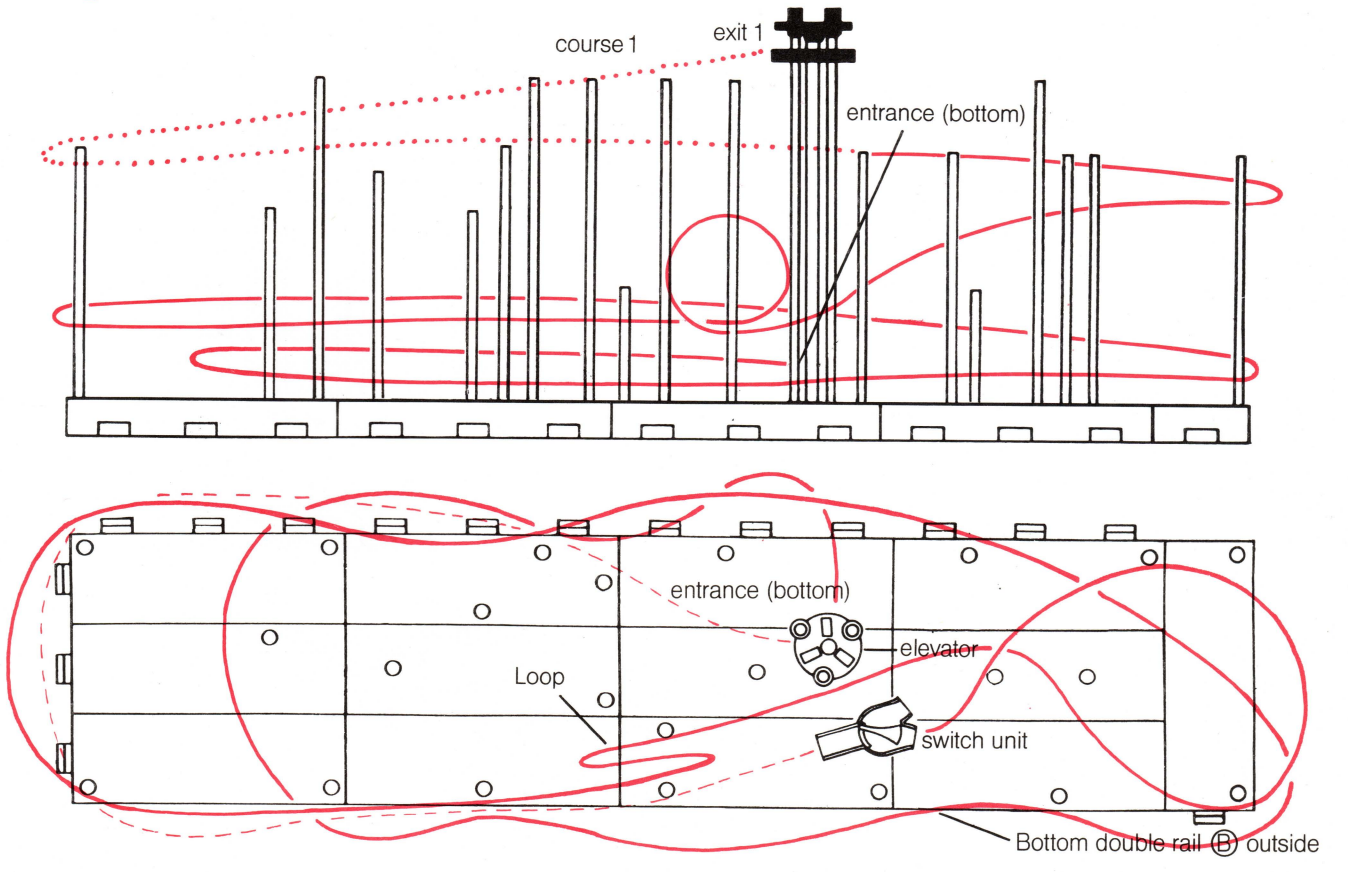
There are 5 courses in the basic layouts. (There are 3 elevator exits and 4 entrances used due to the use of a switching unit.) Observe the pictures carefully since they all relate to the double rails.

LAYOUT ②



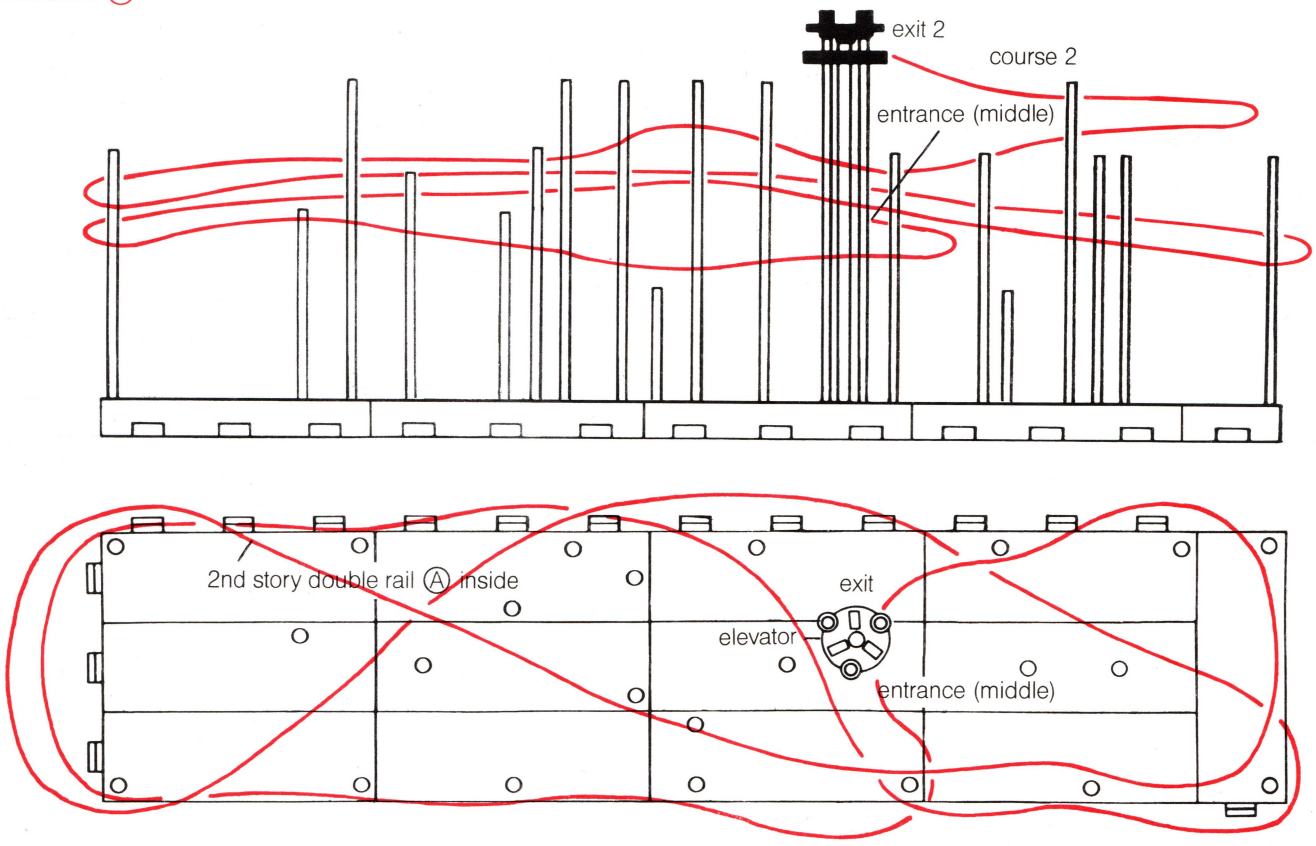
Cut a pair of rails to a length of 150 ¼" and attach as shown.

LAYOUT ③



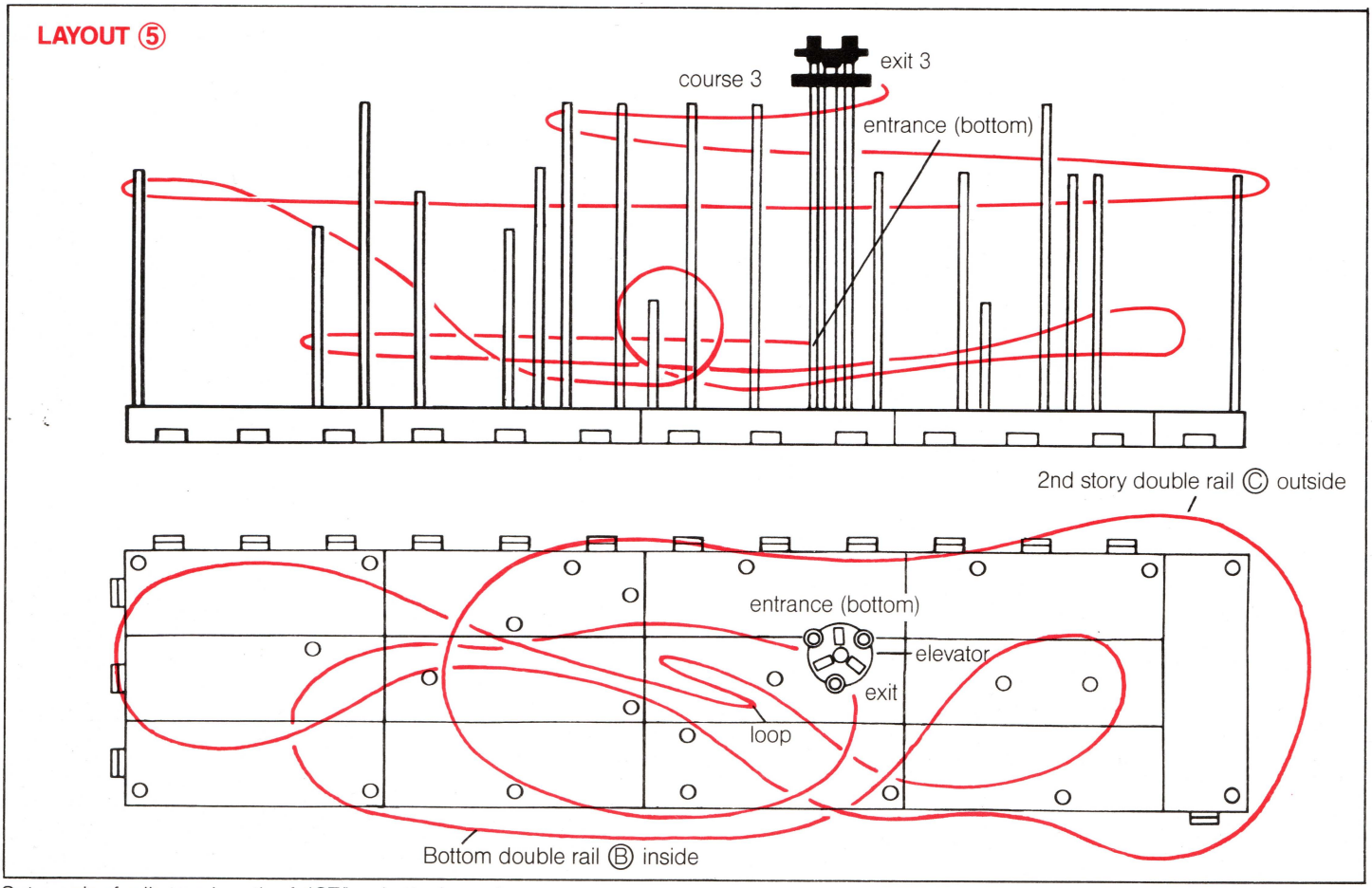
Cut a pair of rails to a length of 189" and attach as shown.

LAYOUT ④



Cut a pair of rails to a length of 180" and attach as shown.

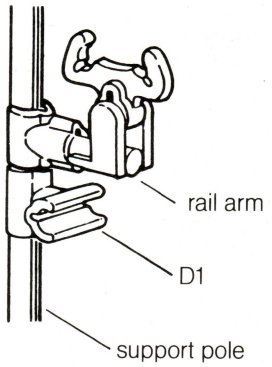
LAYOUT ⑤



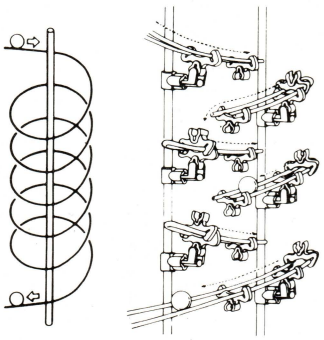
Cut a pair of rails to a length of 187" and attach as shown.

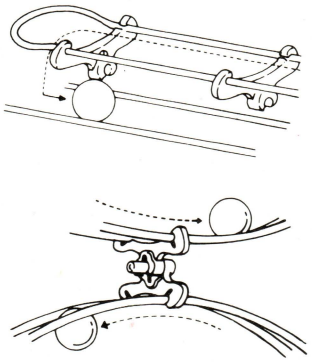
CHECK POINT 2
When the whole set is assembled, turn the motor on, and try running the balls. Sometimes, balls may run right next to each other. When 2 or 3 balls run right after each other, the rails may sag due to the weight of the balls. In this case, reinforce the rails using rail clamps or support poles. If the rail arms don't exactly match, put D1 or C1 underneath the rail arms. You may also refer to Check Point 1, Instructions for Attaching Rails on Page 6, or Entrance/Exit explanation of the elevators on Page 7, and enjoy smooth and continuous rides.

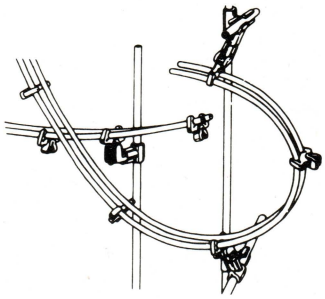
- After enjoying the basic layouts, feel free to accept the challenge of creating your own original layouts.
- This product allows you to assemble bigger layouts with additional parts. Your ingenuity will enable you to expand the layout to its fullest extent.
- Dust or lint can slow down the movement of balls. Occasional wiping with a silicone cloth is recommended.
- It is dangerous to lean on, or to apply weight to, the completed set.



Examples of schemes



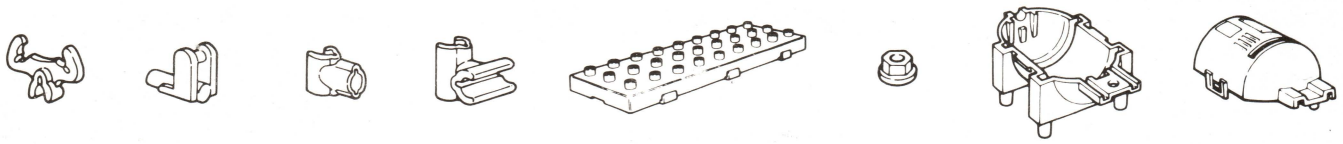




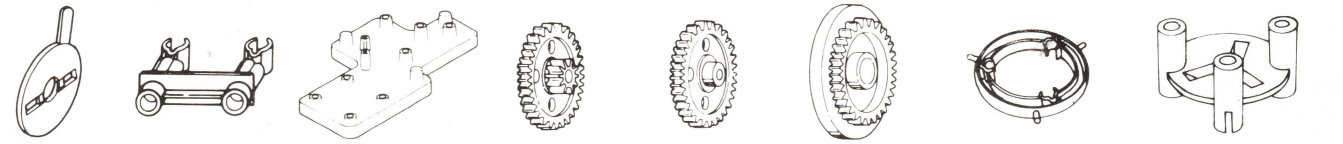
TROUBLE SHOOTING

Problems		Possible reasons
Doesn't move.	The gears don't turn.	The switch is off. The batteries are worn out. The batteries are not placed properly. A wire is loose or improperly wired. Some obstacle is blocking the gears.
	The gears turn.	The gears aren't hooked up closely enough to mesh. The gears are not properly assembled.
It moves sporadically.		The wiring is loose, the battery is weak. The gears are not meshed properly. The gears are not assembled correctly.
The ball falls off the elevator. The ball doesn't climb up the elevator.		The elevator is not perfectly vertical, not aligned properly. The support pole of the elevator is tilted. A wire is loose, the battery is weak.
The ball falls off the course.		See P 6 and 7.
The ball doesn't come out of the elevator.		See P 7.
The ball stops in the middle of the course.		The drop is negative or too little.
It makes a strange noise. It rattles. It makes a rubbing noise.		Loose assembly. The gears are not meshed properly. Something is stuck in the gears.
The ball doesn't make the curve properly.		Adjust the double loop (See P 7). Sometimes it's due to the lack of turning speed. Slide the curve unit up or down on the support pole.
The ball doesn't fit into the curve unit.		Align the Part A1 properly with the hole.

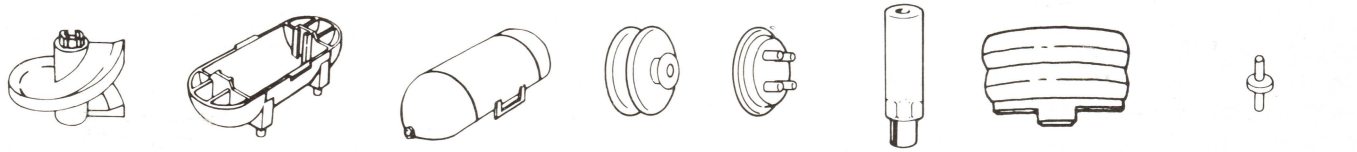
PARTS LIST



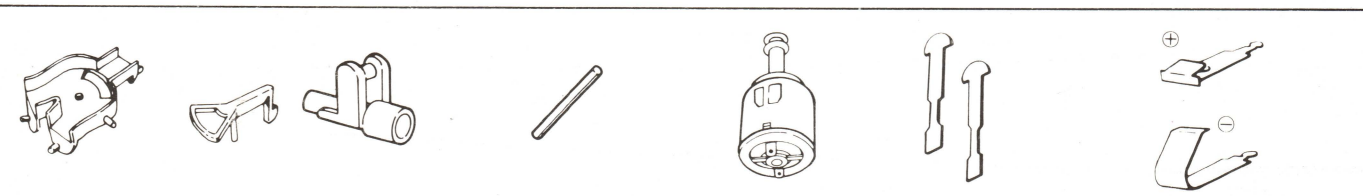
A1	B1	C1	D1	E1	F8	G1	G2
Cross tie	L joint	Joint 1	Joint 2	Base unit	Gear nut	Motor box (bottom)	Motor box (cover)
312 pcs.	104 pcs.	104 pcs.	52 pcs.	13 pcs.	2 pcs.	1 piece	1 piece



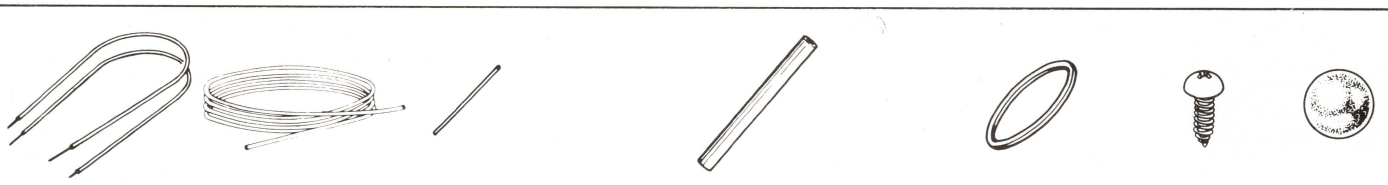
G3	G31	K1	K2	K3	K4	K5	K6
Switch board	Motor bed	Elevator base	Elevator gear	Elevator gear	Elevator gear	Elevator parts	Elevator parts
1 piece	2 pcs.	1 piece	1 piece	1 piece	1 piece	3 pcs.	1 piece



K7	H1	H2	K11	K12	K13	K15	M1
Elevator parts	Battery box (bottom)	Battery box (cover)	Pulley #1	Pulley #2	Pulley mount	Elevator guard	Pipe connecting parts
14 pcs.	1 piece	1 piece	1 piece	1 piece	1 piece	2 pcs.	4 pcs.



P1	P2	W1	Shafts 3/32" Diam.			Motor	Metal motor fittings	Battery fittings for ⊕ and ⊖
Switch unit	Switch part	W joint	5/8" long	1" long	15/16" long	1 piece	2 pcs.	1 each
1 piece	1 piece	20 pcs.	1 piece	1 piece	1 piece			



Lead wire	Rail	Rail joint	Support poles					Rubber belt	Screws for base	Balls
blue, red 7 7/8"	131 feet	1/32" Diam., 3/8" long	13 3/4"	11 3/4"	9 7/8"	7 7/8"	3 7/8"	2 pcs.	6 pcs.	6 pcs.
1 each		10 pcs.	10 pcs.	8 pcs.	6 pcs.	6 pcs.	5 pcs.			

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